



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Ikemoto et al.

Art Unit: 1625

Application No. 09/824,447

Examiner: R. K. Covington

Filed: April 2, 2001

For: CITALOPRAM HYDROBROMIDE  
CRYSTAL AND METHOD FOR  
CRYSTALLIZATION THEREOF

**PENDING CLAIMS AFTER AMENDMENTS  
MADE IN RESPONSE TO OFFICE ACTION DATED AUGUST 19, 2002**

1. Citalopram hydrobromide crystals containing crystals having a particle size of less than 5  $\mu\text{m}$  in a proportion of 35% at most.
2. The citalopram hydrobromide crystals of claim 1, which comprise crystals having a particle size of not less than 20  $\mu\text{m}$  in a proportion of not less than 10%.
3. The citalopram hydrobromide crystals of claim 1, which have an average aspect ratio of not less than 2.0 and not more than 9.0.
4. The citalopram hydrobromide crystals of claim 1, which have an average aspect ratio of not less than 2.5 and less than 4.5.
5. The citalopram hydrobromide crystals of claim 1, which have an average aspect ratio of not less than 4.5 and not more than 6.0.
6. Citalopram hydrobromide crystals having an average aspect ratio of not less than 2.0 and not more than 9.0.
7. Citalopram hydrobromide crystals having an average aspect ratio of not less than 2.5 and less than 4.5.

8. Citalopram hydrobromide crystals having an average aspect ratio of not less than 4.5 and not more than 6.0.

9. A method for crystallizing citalopram hydrobromide, which comprises the steps of

(A1) dissolving, by heating, citalopram hydrobromide in a solvent comprising at least one member selected from the group consisting of alcohol having 1 to 3 carbon atoms, water and acetone and

(B1) cooling the resulting product to allow for crystallization while controlling a cooling rate.

12. The method of claim 9, which comprises controlling an average cooling rate of the solution in a temperature range of from 20°C to 40°C to not less than 0.5°C/hour and less than 30°C/hour.

13. The method of claim 9, which comprises, after cooling to a temperature range of from not less than 30°C to less than 48°C, adding a seed crystal of citalopram hydrobromide for crystallization.

14. A method for crystallizing citalopram hydrobromide, which comprises the steps of

(A2) dissolving, by heating, citalopram hydrobromide in a solvent comprising at least one member selected from the group consisting of alcohol having 1 to 3 carbon atoms, water and acetone,

(B2) cooling the obtained solution to achieve crystallization,

(C2) dissolving a part of the obtained crystals by heating, and

(D2) recrystallizing while controlling a cooling rate.

15. The method according to claim 14, which comprises cooling to a temperature range of from not less than 30°C to less than 48°C in (B2).

16. The method according to claim 14, which comprises, after cooling to a temperature range of from not less than 30°C to less than 48°C, adding a seed crystal of citalopram hydrobromide for crystallization in (B2).

17. The method according to claim 14, which comprises dissolving a part of the crystals by heating to not less than 48°C and not more than 60°C in (C2).

18. The method according to claim 14, which comprises controlling the average cooling rate of the solution in the temperature range of from (heating temperature in (C2)) to (said heating temperature — 30°C) to not less than 30°C/hour and not more than 90°C/hour in (D2).

19. The method according to claim 14, which comprises controlling the average cooling rate of the solution in the temperature range of from (heating temperature in (C2)) to (said heating temperature - 30°C) to not less than 1°C/hour and less than 30°C/hour in (D2).

20. The method of claim 12, which comprises, after cooling to a temperature range of from not less than 30°C to less than 48°C, adding a seed crystal of citalopram hydrobromide for crystallization.